
NAS NORTH ISLAND - NAVY REGION SOUTHWEST

NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

CLEANUP

BENTHIC FLUX SAMPLING DEVICE

LEAD ACTIVITY

Southwest Division Naval Facilities Engineering Command (SWDIV)

STATUS

Complete

MISSION

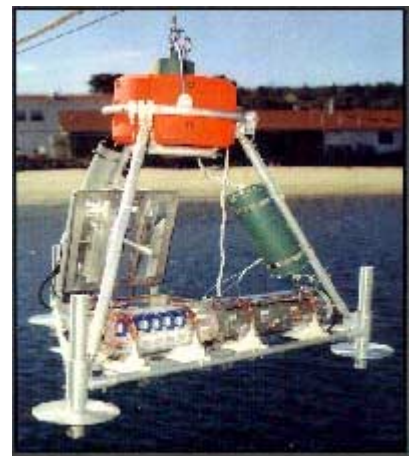
Use innovative pore water sampling technology, coupled with specially designed seepage meters for benthic flux sampling, to identify the area in San Diego Bay where contaminated groundwater discharges to the bay and quantify the amount of contamination being released into San Diego Bay

REQUIREMENT

Contaminated sites at many Navy facilities have the potential to impact bays and estuaries. These types of sites include locations where contaminated sediments are present, as well as sites located inland where contaminated groundwater has the potential to migrate to surface waters. The Benthic Flux Sampling Device (BFSD) and companion seepage meter and pore water sampling technologies have been developed by Space and Naval Warfare (SPAWAR) Systems Center in San Diego to meet the requirement of identifying whether contamination is being released from contaminated sediments and where contaminated groundwater may be discharging to surface waters.

DESCRIPTION

Naval Air Station (NAS) North Island Site 9 was identified as potentially discharging groundwater contaminated with chlorinated solvents to San Diego Bay. SPAWAR Systems Center was tasked by SWDIV to conduct a two-phase approach to delineate the area of discharge and to quantify the amount of contamination being released to San Diego Bay. The first phase consisted of using innovative pore water sampling techniques to identify the locations where contaminated groundwater migrated to the bay through pore water. Pore water sampling consisted of a metal-tip hollow rod being driven into the sediment to a desired depth. A syringe placed on the end of the rod was used to pull water up through the rod to obtain a sample. Samples were extracted from depths of 1 foot and 5 feet. Based on the results of phase 1, the second phase used a modified BFSD, deployed to six locations, to determine the seepage rate of pore water to the bay, and to quantify the amount of contamination reaching the bay. Pore water sampling



BFSD

results indicated large concentrations of VOCs 5 feet into Bay sediments with much lower concentrations 1 foot into Bay sediments. Seepage samples were analyzed for VOCs and results indicated VOCs are entering San Diego Bay from the Bay sediments.

BENEFITS

- The BFSD, seepage, and pore water studies provided a direct, quantitative assessment of the amount of contamination reaching the bay. The BFSD technology has been designed to also quantitatively demonstrate that some contaminated sediments do not release detectable concentrations of contaminants to the water. Use of the technology can provide data to demonstrate which sediments may be left in place with no adverse effects on the environment, and which sediments may require remediation

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
FEB 1998	Pore Water Sampling at Site 9
APR 1998	Seepage Sampling and Analysis at Site 9
JUN 1998	BFSD Demonstration at Naval Station San Diego – Paleta Creek
NOV 1998	The results of the work at Site 9 are currently being reviewed by SWDIV and SPAWAR Systems Center, and a report will be completed
NOV 1998	The BFSD technology was used at the Alameda Point (formerly NAS Alameda) Seaplane Lagoon to assess the potential for contaminant release from contaminated sediments in the lagoon
JUN 1999	Following a successful demonstration of the BFSD in Pearl Harbor NSY, and review of the data from San Diego Bay (NS San Diego) in 1998, the technology was certified by Cal/EPA

FUTURE PLAN OF ACTION & MILESTONES

Not Applicable

COLLABORATION/TECHNOLOGY TRANSFER

This project was a collaborative effort between NAS North Island, SPAWAR Systems Center, SWDIV, and Bechtel National, Inc. SPAWAR Systems Center developed and provided the Benthic Flux sampling device demonstrated at NAS North Island.

BIBLIOGRAPHY

- Bechtel National, Inc. Draft Work Plan Addendum for the Additional Remedial Investigation Sampling Effort at Site 9, Naval Air Station North Island, San Diego, CA.

RELATED GOVERNMENT INTERNET SITES

[SPAWAR Systems Center Home Page](#)

RELATED NAVY GUIDEBOOK REQUIREMENTS

- 08029 Water Quality/Sediment Studies

UPDATED: 01/23/02